**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-44 (**Cancelled**)

45. (**Currently Amended**) In a telecommunication system, a method for routing optical data signals using a first communication path comprising at least one optical fiber extending between at least two network elements of the telecommunication system for carrying optical data signals separated from optical addressing signals, and a second communication path comprising one or more optical fibers extending between at least two network elements of the telecommunication system for carrying optical addressing signals separated from said optical data signals, each of said at least two network elements having routing capabilities, the method comprising the steps of

providing a combination of said optical addressing signals to provide addressing information required for establishing an address for routing the optical data signals, and

providing at least one of said at least one optical fiber comprised in said first communication path for carrying said optical data signals separated from said optical addressing signals ~~is~~ different from any of the one or more optical fibers comprised in said second communication path, and

wherein said optical data signals being conveyed separately from said optical addressing signals along said at least one optical fiber were generated at a plurality of

different network elements, each of said plurality of different network elements having routing capabilities.

46. (**Currently Amended**) In a telecommunication system, a method for routing optical data signals between at least two routers in the system, ~~which~~ said method ~~comprises~~comprising:

generating first optical addressing signals by converting signals identifying a destination address into corresponding optical addressing signals;

transmitting said optical addressing signals separated from said optical data signals over one or more optical fibers comprised in a first communication path, said first communication path extending from one of the at least two routers to another router, each of said at least two routers having routing capabilities; and

concurrently or subsequently transmitting said optical data signals separated from said optical addressing signals to said another router via a second communication path comprising at least one optical fiber, said second communication path extending from said one router of the at least two routers to the another router, and comprising at least one optical fiber which is different from any of the at least one optical fibers comprised in said first communication path, wherein said optical data signals being conveyed separately from said optical addressing signals were generated at a plurality of different network elements, each of said at least two network elements having routing capabilities.

47. (**Previously Presented**) The method according to claim 46, further comprising the steps of:

generating new optical addressing signals associated with the next section of a transmission path extending from said one router of the at least two routers towards said destination address;

transmitting the new optical addressing signals over one or more optical fibers extending between said one router of the at least two routers and another router;

transmitting said optical data signals to said another router via an optical fiber extending between said one router of the at least two routers and said another router wherein said optical fiber over which said optical data signals are transmitted is different from said one or more optical fibers for carrying said optical data signals separated from said optical addressing signals; and

repeating the steps of generating new optical addressing signals, transmitting the new optical addressing signals separated from said optical data signals and transmitting said optical data signals separated from said new optical addressing signals to said another router, until said optical data signals are transmitted to said destination address via subsequent routers located along a transmission path extending towards said destination address.

48. (**Previously Presented**) The method according to claim 45, further comprising the step of transmitting, at one of two binary illumination states, the information extracted from at least one of the optical addressing signals.

49. (**Previously Presented**) The method according to claim 45, further comprising the steps of transmitting, at a certain illumination level, at least one of the optical addressing signals and presenting, by absence of illumination at least one other optical addressing signal.

50. (**Previously Presented**) The method according to claim 45, wherein at least two of the optical addressing signals are transmitted each at substantially the same wavelength and at a different illumination intensity and wherein each of the illumination intensities corresponds to a different addressing information.

51. (**Previously Presented**) The method according to claim 45, wherein at least two of the optical addressing signals are transmitted each at substantially the same intensity and at a different wavelength, and wherein each of the different wavelengths corresponds to a different addressing information.

52. (**Previously Presented**) The method according to claim 50, wherein an optical address is derived from a combination of at least two optical addressing signals each transmitted at a different wavelength and at a different intensity from the other.

53. (**Previously Presented**) The method according to claim 46, wherein the transmission of at least one of the optical data signals is delayed until the following steps are performed:

decoding said optical addressing signals;

deriving addressing information from the decoded optical addressing signals; and

if required, generating another, or using said, optical routing address for further routing of said optical data signals.

54. (**Previously Presented**) The method according to claim 53, wherein the transmission of said at least one of the optical data signals is delayed by allowing said at least one of the optical data signals to pass through an optic fiber of a length corresponding to a desired delay in the transmission.

55. (**Previously Presented**) The method according to claim 46, further comprising:

transmitting to said one of the at least two routers an indication that said optical data signals can be forwarded towards their destination;

receiving said indication at said one of the at least two routers; and

transmitting, responsive to receiving said indication, said optical data signals towards said another router along said data transmission path.

56. (**Cancelled**)

57. (**Previously Presented**) The method according to claim 45, wherein at least one part of said second communication path extends in a network different than a network in which said optical data signals are transmitted to their destination.

58. (**Cancelled**)

59. (**Previously Presented**) The method according to claim 57, wherein said at least one part of said first path extends in a network which uses at least one of the following protocols: MPLS, MPλS, IP, ATM and SS7.

60. - 65 (**cancelled**).

66. (**Currently Amended**) Routing apparatus for routing optical data signals, said apparatus comprises:

means for generating first optical addressing signals by converting signals identifying a destination address into corresponding optical addressing signals;

means for transmitting said optical addressing signals from said routing apparatus to a second router over a first communication path comprising at least one optical fiber for carrying said optical addressing signals separated from said optical data signals, each of said routing apparatus and said second router having routing capabilities; and

means for transmitting said optical data signals from said routing apparatus to said second router along a second communication path comprising at least

one optical fiber, said at least one optical fiber for carrying said optical data signals separated from said optical addressing signals and wherein said at least one optical fiber for carrying said optical data signals separated from said optical addressing signals is different from any of the at least one optical fibers comprised in said first communication path, and wherein said optical data signals being conveyed separately from said optical addressing signals, were generated at a plurality of different network elements, each of said plurality of different network elements having routing capabilities.

67. (**Previously Presented**) The apparatus according to claim 66, in which at least one of the optical addressing signals is transmitted at a certain illumination level and at least another optical addressing signal is presented by absence of illumination.

68. (**Previously presented**) The apparatus according to claim 66, in which at least two of the optical addressing signals are transmitted at substantially similar wavelengths and at a different illumination intensity, and each of the illumination intensities corresponds to a different addressing information.

69. (**Previously presented**) The apparatus according to claim 66, wherein at least two of the optical addressing signals are transmitted at a different wavelength, and each of the different wavelengths corresponds to a different addressing information.

70. (**Previously presented**) The apparatus according to Claim 69, wherein said at least two of the optical addressing signals are transmitted at substantially similar intensity.

71. (**Previously presented**) The apparatus according to claim 66, in which at least two of the optical addressing signals are transmitted each at a wavelength and intensity that are different from the wavelength and intensity of the other one of said at least two of the optical addressing signals.

72. (**Previously Presented)** The apparatus according to claim 66, further comprising:

means for delaying said optical data signals;

means for decoding said optical addressing signals;

means for deriving addressing information from the decoded optical addressing signals; and

means for generating optical routing address signals for further routing of said optical data signals.

73. (**Previously Presented**) The apparatus according to claim 72, comprising an optic fiber for delaying the transmission of at least one of the optical data signals and means for directing said at least one of the optical data signals to pass through said optic fiber.

74 - 81 (**cancelled**).

82. (**Currently Amended**) Apparatus for transmitting optical data signals between at least two network elements in a system, comprising:

a) signal generating means for generating optical addressing signals by converting signals identifying a destination address into corresponding optical addressing signals;

b) transmission means for transmitting said optical addressing signals separated from said optical data signals over a first communication path comprising one or more optical fibers and extending between the at least two network elements towards said destination address, each of said at least two network elements having routing capabilities; and

c) transmission means for transmitting said optical data signals towards said destination address along a second communication path comprising at least one optical fiber extending between the at least two network elements for conveying said optical data signals separated from said optical addressing signals, wherein at least one of said at least one optical fiber in said second communication path is different than any of the at least one optical fibers comprised in the second communication path, and wherein said optical data signals being conveyed separately from said optical addressing signals, were generated at a plurality of different network elements, each of said plurality of different network elements having routing capabilities.

83. (**Previously Presented**) The apparatus according to Claim 82, further comprising means for receiving an indication that said optical data signals can be forwarded towards their destination, wherein said means for transmitting said optical data signals is adapted to transmit the optical data signals towards said destination responsive to receiving said indication.

84. (**Previously Presented**) The apparatus according to claim 83, operatively associated with at least one link that is a member of the group comprising: a link in a MPLS network, a link in a MPλS network, a link in an ATM network and a link in an SS7 network, which link is adapted to receive said indication.

85 (**cancelled**).

86. (**Currently Amended**) A telecommunication routing apparatus comprising:

a) receiving means for receiving first optical addressing signals;

b) signal generation means for generating second optical addressing signals associated with the next section of a transmission path extending towards a destination address;

c) transmission means for transmitting the second optical addressing signals separated from optical data signals over one or more optical fibers extending from said telecommunication routing apparatus towards the destination

address representing a second network element, said telecommunication routing apparatus and said second network element each having routing capabilities;

d) receiving means for receiving optical data signals generated at a plurality of different network elements, each of said plurality of different network elements having routing capabilities; and

e) transmission means for transmitting the optical data signals received towards the destination address along an optical path extending from the telecommunication routing apparatus toward the second network element which comprises at least one optical fiber that ~~isdifferent is~~ different from any one of said one or more optical fibers over which the second optical addressing signals separated from the optical data signals are transmitted.